CORE
Metadata, citation and similar papers at core.ac.uk
Provided by Elsevier - Publisher Connector

News

Celebrating 10 years of the Research Fellowship Scheme

Sir Peter J Morris FRS
President of The Royal College of Surgeons of England
Correspondence to: The Royal College of Surgeons of England, 35-43 Lincoln's Inn Fields, London WC2A 3PE

On 18th November 2003, we at the college celebrated 10 years of the Research Fellowship Scheme. Over this time, the College has awarded Research Fellowships to over 300 Members and Fellows and spent some £11 million on the Scheme. The day started with a display of over 50 posters by Research Fellows, these were of the very highest quality. Later in the morning, the programme of presented papers began - these were comprised of presentations from Research Fellows themselves on how they started, what they hoped to get out of their Fellowship and what they had achieved. There were a wide range of contributions, from academic surgery concerning advice on seeking grants, seeking industrial funding, laboratory research, health technology assessment, advances in surgical technology, and finally a discussion about seeking a career in academic surgery with presentations from two Clinical Surgical Scientists and a young Professor.

In the middle of the day, an analysis of the outcome of all the Surgical Fellows over a ten year period was presented which showed that some 27% had done PhDs and many of the early Fellows were now consultants or in University posts, but still pursuing research. This was most encouraging and the review will be published in due course.

The final session after tea dealt with surgical research from a University and an NHS view point. This was given by two people who had successfully achieved an active research programme in both spheres. The final presentation was given by Brian Rowlands, Chairman of the Society of Acdemics and Research Surgeon's, on the future of academic surgery, in which he managed to finish on an upbeat note.

This was one of the most satisfactory meetings that I have attended in the College, and certainly demonstrated that many highly talented young surgeons are being attracted into research training. But we must endeavour to make academic surgery at a senior level more attractive than it is now to retain this talent. Without question, the Research Fellowship scheme can be judged as having been a very successful venture by the College.

Facial Modelling Software Breakthrough

New software has been developed which models the effect of the different incisions surgeons can make and is designed to help minimise the disfigurement some patients can suffer after a major operation. "The system allows the user to see the results of a particular wound closure and edit the cutting path to explore different options," said Steve Pieper, a computer scientist at the Brigham and Women's Hospital's Surgical Planning Laboratory in Boston.

Figure 1. *Images of the user interface to the surgery simulation system*

This kind of software can have a range of applications. For example, when surgeons remove a facial tumour, they have to cut the skin to create flaps that they can pull back to reveal the tissue below. Because skin can clump or stretch unpredictably, and surgery can interfere with the underlying muscles and other soft tissues, it is difficult to predict the cosmetic outcome after the skin flaps are rejoined during the later part of the operation.

This software builds on previous modeling software which used a "generic blueprint" of the face rather than precise individual mapping and thus did not take into account the wide variation in soft tissue structure between individuals. Pieper has now teamed up with colleagues at Digital Elite in Los Angeles (a company that specialises in facial modeling for the film industry) to produce software that accurately models individual soft-tissue variation by basing its calculations on data from MRI scans of the patient undergoing surgery:

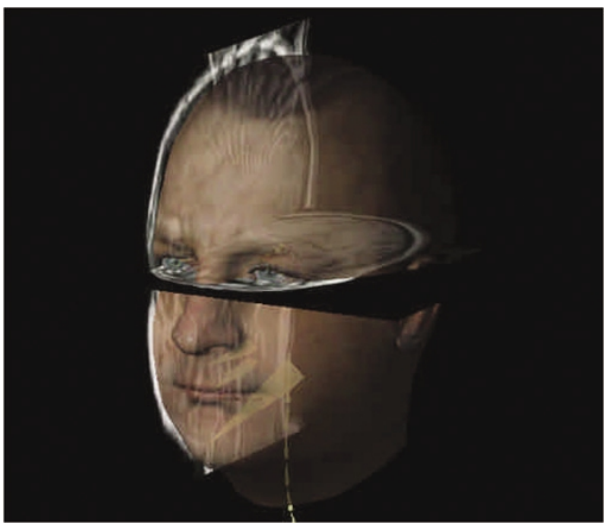

Figure 2. *This picture shows the more recent integration of MRI data with the surface scans to allow for more accurate 3-dimensional surgical planning.*

The scans show the structure of the epidermis, the dermis and the subcutaneous fat, the three layers closest to the skin surface. These layers have an important effect on the way the face looks and the forces the skin is put under when incisions are made and then wound edges sutured. The 3-layer scan information is combined with a 3D scan of the skin surface to give the external shape of the face and a prediction of its physical properties. Using the data from the MRI scans, the software employs the technique of "finite element modeling" to divide each layer into thousands of three-dimensional elements. These elements are then programmed to interact with each otheraccording to a set of equations designed to reproduce the behaviour of real tissue in